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10/737,136	12/15/2003	Michael H. Eiselt	IVPD-0059	6345

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EXAMINER	
BELLO, AGUSTIN	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/737,136	EISELT ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19-51* is/are pending in the application.

4a) Of the above claim(s) *35-48* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,19-22,24-34 and 49-51* is/are rejected.

7)☒ Claim(s) *23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 35-46 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 04/02/07.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 7-8, 24, 30-31, 49-50, and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Maxham (U.S. Patent No. 6,411,407).

Regarding claim 1 and 31, Maxham teaches a first optical coupler/decoupler (i.e. coupler to which reference numeral 16 in Figure 4 is input) for separating from a first bidirectional signal, a first signal (i.e. "Receive Long-Band" in Figure 4) bound in a first direction, and for combining a second signal (i.e. "Transmit Short-Band" in Figure 4) bound in a second direction into the first bidirectional signal; a second optical coupler/decoupler (i.e. coupler to which reference numeral 26 in Figure 4 is output) for separating from a second bidirectional signal, a third signal bound (i.e. "Receive Short-Band" in Figure 4) in the second direction, and for combining a fourth signal (i.e. "Transmit Long-Band" in Figure 4) bound in the first direction into the second bidirectional signal; a first optical attenuator (i.e. the left-most attenuator in Figure 4) connected to the first signal and to an optical coupler (reference numeral 52 in Figure

4); a second optical attenuator (i.e. the right-most attenuator in Figure 4) connected to the third signal and to the optical coupler (reference numeral 52 in Figure 4), the optical coupler for combining the first signal with the third signal into a combined signal (reference numeral 54 in Figure 4) ; the optical coupler operatively connected to an optical amplifier (reference numeral 56 in Figure 4), the optical amplifier for converting the combined signal into a combined amplified signal (reference numeral 70 in Figure 4); and the optical amplifier operatively connected to an optical decoupler (reference numeral 72 in Figure 4) for decoupling the combined amplified signal into the fourth signal and the second signal.

Regarding claim 2, Maxham teaches that the optical amplifier comprises a multistage amplifier (reference numeral 56 in Figure 4)

Regarding claim 3, Maxham teaches that the optical amplifier further comprises a first stage (reference numeral 23 in Figure 4) producing an intermediate combined amplified signal connected to a second stage (reference numeral 27 in Figure 4) producing the combined amplified signal.

Regarding claim 7, Maxham teaches that the fourth signal and the second signal comprise different wavelengths in two separate bands (i.e. "Transmit Short-Band" "Transmit Long-Band" in Figure 4).

Regarding claim 8, Maxham teaches the fourth signal and the second signal are interleaved on separate channels (i.e. "Transmit Short-Band" "Transmit Long-Band" in Figure 4).

Regarding claim 24, Maxham teaches that the combined amplified signal is further modified by an optical element before being decoupled (i.e. the signal is split with part of the signal being sent to the backplane modules "BP" in Figure 4).

Regarding claims 30 and 50, Maxham teaches that the first optical attenuator comprises a variable optical attenuator; the second optical attenuator comprises a variable optical attenuator; and the first variable optical attenuator and the second variable optical attenuator are adjusted to equalize the power of the first signal with respect to the third signal (as noted in Figure 4).

Regarding claims 49 and 51, Maxham teaches the first signal comprises an unamplified eastbound signal (i.e. the signal has not passed through the amplifier 56 in Figure 4); the second signal comprises an amplified westbound signal (i.e. the signal has passed through the amplifier 56 in Figure 4); the third signal comprises an unamplified westbound signal (i.e. the signal has not passed through the amplifier 56 in Figure 4); and the fourth signal comprises an amplified eastbound signal (i.e. the signal has passed through the amplifier 56 in Figure 4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4-6 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham in view of Kinoshita (U.S. Patent Application Publication No. 2002/0027703).

Regarding claims 4 and 33, Maxham differs from the claimed invention in that Maxham fails to specifically teach that a third variable optical attenuator is operatively connected between the first stage and the second stage. However, Kinoshita teaches that connecting a third variable optical attenuator between a first stage and a second stage of an amplifier is well known in the art (reference "VAT" in Figure 19). One skilled in the art would have been motivated to connect a third variable optical attenuator between a first stage and a second stage of an amplifier in order to maintain the output of the second stage amplifier at a constant level. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to connect a third variable optical attenuator between a first stage and a second stage of an amplifier.

Regarding claims 5, 6, and 32, Maxham differs from the claimed invention in that Maxham fails to specifically teach a dispersion compensator is operatively connected between the first stage and the second stage. However, Kinoshita teaches that this concept is well known in the art (reference DCM in Figure 19). One skilled in the art would have been motivated to include a dispersion compensator is operatively connected between the first stage and the second stage in order to compensate for dispersion occurring in an optical signal of each channel in a wavelength division multiplexed optical signal (paragraph [0108] of Kinoshita).

6. Claims 9-17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham in view of Berg (U.S. Patent No. 6,757,098).

Regarding claims 9, 11, and 22, Maxham differs from the claimed invention in that Maxham fails to specifically teach that a third/fifth bidirectional signal is coupled with the first/second bidirectional signal in a third/fourth optical coupler to produce a fourth/sixth bidirectional signal. However, Berg teaches that this concept is well known in the art (reference

letter i, i' in Figure 11A). One skilled in the art would have been motivated to coupled a third bidirectional signal with the first bidirectional signal in a third optical coupler to produce a fourth bidirectional signal in order to provide a supervisory signal (reference numeral 35 in Figure 11A of Berg).

Regarding claim 10, the combination of references and Berg in particular teaches that the third bidirectional signal includes an optical service channel (reference numeral 35 in Figure 11A).

Regarding claims 12, and 14, the combination of references and Berg in particular teaches that the optical service channel is in a separate wavelength range from the fourth signal and the second signal (Figure 5A).

Regarding claim 13, the combination of references and Berg in particular teaches that the third bi-directional signal includes a control channel (reference numeral 35 in Figure 11A).

Regarding claims 15, 16, 19, and 20, the combination of references inherently teach westbound/eastbound transmitter and a eastbound/ westbound receiver.

Regarding claims 17 and 21, the combination of references and Berg in particular teaches that the westbound/eastbound transmitted signal is coupled into the third/fifth bidirectional signal (reference numeral 25' in Figure 11A) and the eastbound/westbound received signal is decoupled from the third/fifth bidirectional signal by a third optical coupler/decoupler (reference numeral 25 in Figure 11A).

7. Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham.

Regarding claim 25, Maxham differs from the claimed invention in that Maxham fails to specifically teach that the optical element is an add/drop multiplexer. However, Maxham

suggests as much via a split connection to the backplane. Furthermore, add/drop multiplexers are well known in the art and Official Notice is given to that effect. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include an add/drop multiplexer as an optical element in Maxham.

Regarding claim 26, Maxham differs from the claimed invention in that Maxham fails to specifically teach that the optical element is a dynamic equalizer. However, dynamic gain equalizers are well known in the art and Official Notice is given to that effect. One skilled in the art would have been motivated to include a dynamic gain equalizer in order to equalize the levels of the optical signals before decoupling. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a dynamic gain equalizer as an optical element in Maxham.

Regarding claim 27, Maxham differs from the claimed invention in that Maxham fails to specifically teach that the optical element is a second amplifier. However, the use of amplifiers is well known in the art and Official Notice is given to that effect. One skilled in the art would have been motivated to include a second amplifier in order to amplify the levels of the optical signals before decoupling. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a second amplifier as an optical element in Maxham.

Claims 28 and 29 recite a combination of elements shown above to obvious additions to the disclosure of Maxham. Therefore, these claims are rejected for the reasons noted above.

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham in view of Okuna (U.S. Patent No. 6,480,312).

Regarding claim 34, Maxham differs from the claimed invention in that Maxham fails to specifically teach isolating an eastbound power matched signal; isolating a westbound power matched signal; compensating for the dispersion in the eastbound power matched signal compensating for the dispersion in the westbound power matched signal; and recombining the eastbound power matched signal and the westbound power matched signal. However, Okuna teaches that this concept is well known in the art (Figure 1B). One skilled in the art would have been motivated to compensate the westbound and eastbound signals in this manner in order to provide individualized compensation to each signal. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to isolate an eastbound power matched signal; isolate a westbound power matched signal; compensate for the dispersion in the eastbound power matched signal compensate for the dispersion in the westbound power matched signal; and recombine the eastbound power matched signal and the westbound power matched signal.

Allowable Subject Matter

9. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Agustin Bello
Primary Examiner
Art Unit 2613